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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/475,390	12/30/1999	KENNETH M. HOUSTON	CSLL-588	6274

35893 7590 06/05/2006

GREENBERG TRAURIG, LLP  
ONE INTERNATIONAL PLACE, 20th FL  
ATTN: PATENT ADMINISTRATOR  
BOSTON, MA 02110

EXAMINER
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LAO, LUN S

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/475,390	HOUSTON, KENNETH M.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Lun-See Lao	2615	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### *Introduction*

1. This is response in the amendment filed on 03-06-2006. Claim 22 has been amended and claims 1-25 are pending.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 7-15 and 17-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Kenneth, DEVELOPMENT OF SOUND SOURCE COMPONENTS FOR A NEW ELECTROLARYNX SPEECH PROSTHESIS September 1998, The Charles Stark Draper Laboratory, Inc. (the date was provided by applicant's exhibit A filed on 03-06-2006, remark page 10, 2<sup>nd</sup> paragraph).

Consider claim 1, Kenneth teaches that an electron-larynx comprising:

a waveform generator (see fig.5) configured to selectively generate an input signal (page 4 left column line 16-55);

a linear transducer (see figs. 3-4) a signal from having a throat engagement portion, said transducer configured to receive and transform said input signal into a corresponding output vibration of said throat engagement portion, said output vibration

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being a substantially linear function of said input signal (see page 2 left column line 7- right column line 4); and a power source (see abstract).

Consider claim 2, Kenneth teaches that a linear transducer includes:

- a. an armature assembly, which receives said input signal and vibrates as a function thereof,
  - b. a suspension assembly coupled to said armature assembly; and
  - c. a coupler disk, as said engagement portion, coupled to said suspension assembly,
- wherein a vibration in said armature assembly causes a corresponding vibration of said coupler disk (see fig.3 and page 2 left column line 7- right column line 7).

Consider claims 3-4 and 13-14, Kenneth teaches that an electro-larynx according of the suspension assembly is a flexible planar membrane (see fig .3, and see page 2 left column line 1-27); and an electro-larynx according of the suspension assembly is a mechanical spring (see fig .3, and table 1 and see page 2 left column line 1-27).

Consider claims 5 and 15, Kenneth teaches an electro-larynx according to of the armature assembly is substantially disposed within a cylindrical motor assembly that defines an internal void region along a central axis and having an radial magnetic field maintained within said internal void region (see fig.3), and wherein said armature assembly includes:

- a. a bobbin coupled to said suspension assembly and disposed within said internal void region and along said central axis; and
  - b. a wire coil wrapped around said bobbin and within said magnetic field;
- whereby when said input signal is applied to said wire coil a corresponding vibration of

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said bobbin is experienced (see fig.2 and page 2 left column line 7- right column line 4).

Consider claims 7-8 and 17-18 Kenneth teaches that the armature assembly includes a magneto-resistive element coupled to said engagement portion, wherein an input signal delivered to said magneto-resistive element causes a corresponding linear vibration of said engagement portion (see figs 3-4 and page 2 left column line 7- right column line 4); and the linear transducer has a substantially flat frequency response over a range of about 20 to 2KHz (see page 3, right column line 1-14).

Consider claim 9 Kenneth teaches an electro-larynx of the input signal generated by said waveform generator has a harmonic structure corresponding to a normal glottal excitation, defined over multiple cycles (see fig.5 and page 3 right column line 16- page 4 left column line 13).

Consider claims 10 and 23 Kenneth teach that an electro-larynx of the waveform generator includes:

- a. glottal sample data stored in an electronic memory;
- b. a pitch adjuster, configured to add pitch information to said glottal sample data;
- c. a multiplier, configured to add amplitude information to said glottal sample data;
- d. an equalization filter for generating from said glottal sample data, pitch information, and amplitude information a base digital input signal having a predetermined frequency response; and
- e. a digital to analog converter, configured to transform said base digital

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input signal into said input signal (see figs.5,11 and page 3 right column line 16- page 4 left column line 13).

Consider claims 11 and 20, 24, Kenneth teaches an electro-larynx of the glottal sample data is obtained by inverse filtering and digitally sampling voice data (see page 3 right column line 16- page 4 left column line 13).

Consider claim 12, Kenneth teaches that a linear transducer, for use (in any event, "for use" is not a positive structural limitation) in an electro-larynx having a waveform generator that produces an input signal and a power source (battery), said linear transducer comprising (see abstract):

A. an armature assembly (see figs 3-4), which receives said input signal and vibrates as a function thereof;

B. a suspension assembly coupled to said armature assembly; and

C. a coupler disk, coupled to said suspension assembly, wherein a vibration in said armature assembly causes a corresponding vibration of said coupler disk according to a linear function of said input signal (see figs.3-4 and page 2 left column line 7- right column line 7).

Consider claim 19, Kenneth teaches an electro-larynx comprising :

a waveform generator comprising :

a. a glottal sample data stored in an electronic memory; wherein said glottal sample data is defined over multiple cycles;

b. a pitch adjuster, configured to add pitch information to said glottal sample data;

c. a mixer, configured to add amplitude information to said glottal sample data; and

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d. an equalization filter for generating from said glottal sample data, pitch information, and amplitude information a base digital input signal having a predetermined frequency response ; and

e. a digital to analog converter, configured to transform said base digital input signal into said input signal; and

a linear transducer configured to receive and transform said input signal into a corresponding output vibration of throat engagement portion, said output vibration being a substantially linear function of said input signal (see figs.5,11 and page 3 right column line 16- page 4 left column line 13).

Consider claims 21 and 25, Kenneth teaches a waveform generator of the glottal sample data is derived from a mathematical model which preserves the harmonic qualities of the voice data (see figs.8-10 and page 3 right column line 16- page 4 left column line 13).

Consider claim 22, Kenneth teaches that an electro-larynx comprising:

A. a waveform generator (see fig.5)configured to selectively generate an input signal, wherein said input signal has a harmonic structure corresponding to a normal glottal excitation, defined over multiple cycles (page 4 left column line 16-55);

B. a linear transducer (see figs. 3-4) having a throat engagement portion, said transducer configured to receive and transform said input signal into a corresponding output vibration of said throat engagement portion said output vibration being a substantially linear function of said input signal (see page 2 left column line 7- right column line 4); and

C. a power source (see abstract).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kenneth, DEVELOPMENT OF SOUND SOURCE COMPONENTS FOR A NEW ELECTROLARYNX SPEECH PROSTHESIS September 1998, The Charles Stark Draper Laboratory, Inc. (the date was provided by applicant's exhibit A filed on 03-06-2006 , remark page 10, 2<sup>nd</sup> paragraph) in view of Arnott (US PAT. 5,128,905).

Consider claims 6 and 16, Kenneth teaches that an electro-larynx according of the armature assembly includes an electric actuator coupled to said engagement portion, wherein an input signal delivered to said electric actuator causes a corresponding linear vibration of said engagement portion(see fig.3 and page 2 left column line 7- right column line 4); but Kenneth does not clearly teach a piezo electric actuator.

However, Arnott teaches a piezo electric actuator(see fig.1 and col.3 lines 5-40);

Therefore, it would obvious to one of ordinary skill in the art at the time the invention was make to combine the teaching of Arnott into the teaching of Kenneth to provide a new and improved from of acoustic field transducer.

***Response to Arguments***

6. Applicant's arguments with respect to claims 1-25 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure Teaney (US PAT. 5,171,930) is recited to show other related the electro-larynx.

8. Any response to this action should be mailed to:

Mail Stop \_\_\_\_ (explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:  
**(571) 273-8300**

Hand-delivered responses should be brought to:  
Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (571) 272-7501. The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

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Lao, Lun-See *L.S.*  
Patent Examiner  
US Patent and Trademark Office  
Knox  
571-272-7501  
Date 05-17-2006



VIVIAN CHIN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600